

### Abstract

A receiver for a resonance signal of a magnetic resonance imaging system generates a baseband signal for image processing by dividing a raw resonance signal among multiple parallel channels, each amplified at a respective gain. A digital channel selector determines, at any given  
5 moment, a lowest-distortion channel to be further processed. Amplitude and phase error compensation are handled digitally using complex multipliers, which are derived by a calibration, based on a simple Larmor oscillator, which can be done without the need for a sample and without repeating when measurement conditions are changed. One of the important benefits of the invention is that it provides for gain selection without repeated calibration steps.  
10 This is particularly important in systems that employ fast imaging techniques such as fast spin echo, where the invention can speed imaging substantially.